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PSYCHOLOGICAL SCIENCE AGENDA

AMERICAN PSYCHOLOGICAL ASSOCIATION

ON BEHALF OF SCIENCE

APA Council Allocates up to $500,000 for Psychological Science

The psychological science community received a substantial windfall at the 102nd Annual Convention of APA in Los Angeles.

At the meeting of the APA Council of Representatives on August 14, the Council passed a resolution providing considerable funds for a major APA initiative focused on scientific psychology. Up to $500,000 will be allocated for activities to "promote and enhance the development of scientific psychology and its applications to research and graduate education."

The Council directed that this project, which will continue into 1996, will "be conducted as special presidential initiatives of APA Presidents Ronald E. Fox, Robert J. Resnick, and Dorothy W. Cantor." The resolution also stated that "it is the intention of the American Psychological Association to utilize its resources to promote both the scientific and academic aspects of psychology and the applications and practice of psychology to the benefit of the public interest."

The initiative is in the initial planning stages, with Science Directorate staff now gathering comments from the field on how the funds might best be used to address critical issues now facing psychological science and the needs of this constituency. An interim advisory committee, to be named in September, will advise the association on plans for the funds.

Those interested in suggesting uses for the funds should send comments to the Science Directorate by FAX at (202) 336-5953, or by e-mail to veh.apa@email.apa.org. ■

APA Scores Victory!

Psychologist Appointed to Advisory Council at NHLBI

Years of hard work and persistence by the Public Policy Office (PPO) paid off in July when Karen Matthews, PhD, was appointed to the Advisory Council of the National Heart, Lung and Blood Institute (NHLBI). Dr. Matthews is the first psychologist ever to be chosen for this influential group, which makes recommendations to NHLBI Director, Claude J. M. Lenfant, MD, on matters related to the Institute.

NHLBI maintains a coordinated research program that includes basic and clinical research and epidemiological investigations. The Institute is a leader in supporting critical health and behavior research and in investigating effects of treatment on quality of life.

Convincing the top brass at NHLBI of the importance of the behavioral sciences to the Institute's mission has been a major goal of APA for the past decade. The Science Directorate and PPO won their first battle in October 1988 when Congress passed legislation requiring that each of the National Institutes of Health include a behavioral scientist on its Advisory Council. This language was then modified to say that each Council must include two behavioral scientists *or* public health specialists. Until this summer's victory, the two NHLBI Council members have always come from the public health arena.

After this legislation was passed in 1988, communication between PPO and NHLBI was limited to formal written correspondence. On several occasions, PPO recommended candidates for the

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SCIENCE BRIEFS

A Powerful Paradigm Made Stronger

In memory of Roger Sperry, PhD, who died on April 17, 1994, the following is an edited version of a paper Dr. Sperry wrote for the 1993 APA Annual Convention. Dr. Sperry, a neurobiologist, was best known for his studies of animals, and then humans, with "split brains," in whom the connection between the two cerebral hemispheres had been severed during surgery used in the early 1960s to treat severe epilepsy. In these studies, he discovered that the corpus callosum serves as a channel to pass information between the two hemispheres of the brain. In the latter years of his life, Dr. Sperry focused on developing a theory on consciousness.

Among his many awards, Dr. Sperry received the APA Distinguished Scientific Contribution Award in 1971, the Nobel Prize for Physiology or Medicine in 1981, the Presidential National Medal of Science in 1989, and APA's Award for Outstanding Lifetime Contribution to Psychology in 1993.

Due to Dr. Sperry's deteriorating health, Robert W. Doty, PhD, presented this paper at the 101st Annual Convention of APA.

—the Editor

As we look forward to a second century for APA--not to mention a whole new millennium--some pessimists, bombarded by the daily media's mounting on-rush of shocking new violence, large-scale famine, escalating human degradation, resource depletion, and other portentous global crises, begin to ask, "What future?"

A few may recall the famous doomsday article published in Science some 35 years ago, proclaiming in its title, Doomsday, Friday 13, November, A.D. 2026. A carefully worked-out mathematical equation predicted that the rising tilt of the world population curve would then reach a vertical tangent, directed straight up to infinity.

Of course, many other doomsday predictions have since come and gone. This particular equation, however, has not turned out to be just one more flaky cult-type prophesy. Highly researched, data-based, and time-tested by top theorists, the formula has since withstood successfully all criticisms, plus a 20-year follow-up in which it was shown to be substantially underestimating the actual growth rate.

It is in this context of a direly imperiled future, where the risks at stake surely demand a policy of "better safe than sorry," that I turn now on a more optimistic note to a possible noncatastrophic solution. In psychology's cognitive revolution, and the new mentalist paradigm it brings, we have the basis for a much needed new way of thinking. New mind sets, beliefs, and values are upheld that would act to preserve and enhance our world instead of destroying it. This so-called cognitive, consciousness, or mentalist revolution of the 1970s has introduced a whole new way of explaining and understanding ourselves and the world in which we live.

"All in all and all in all" as Tennyson put it, a future vision emerges that puts behavioral science in a leadership role with a critical mission, second to none. The great challenge ahead, beside which all others pale, is to take this paradigm gained, put it into action, and turn humankind's self-destructive course around before it's too late.

How Do We Get From Here to There?

How do we get from psychology's cognitive revolution to a save-the-world paradigm, to a universal global ethic, a new moral compass? How does a turnabout on consciousness lead to new moral priorities and a unifying standard for world law and justice? The logical support, although straightforward and proceeding directly from brain function to behavior, involves certain steps in the reasoning process that are subject to different underlying presuppositions and, hence, to alternative conclusions.

Neuroscientists in particular, noting that the whole case depends on a changed concept of consciousness, demand to know, "What is the evidence?" The answer, of course, is that there is not any new evidence, and if there were, it probably would not help. What is involved is the age-old reductionist-holist issue.

In the complete absence of any real evidence, science has continued for some 200 years to impose its conclusion that consciousness is not causal, that mind does not move matter, or as physicist Donald MacKay used to tell us, "No physical action waits on any but another physical action."

We have always had two central and distinct questions about consciousness: First, how is consciousness generated by the physical brain? Second, is consciousness once generated and whatever it is, causal or acausal? It is the latter question concerning causality that has been involved all along in the age-old history of the mind-brain problem. Science and philosophy both have long insisted on the conclusion that consciousness could not possibly, or logically, have any causal influence because this would conflict with other physical thinking and laws already established. What was necessary to refute this old wisdom (now supervened) was more than evidence. A new way of reasoning, a new logic, or different reference frame for causation was needed. In other words what reversed the scientific ban on consciousness was not new evidence, but a new logic, actually a new way of understanding the nature and effects of interactions between hierarchic levels of organization.

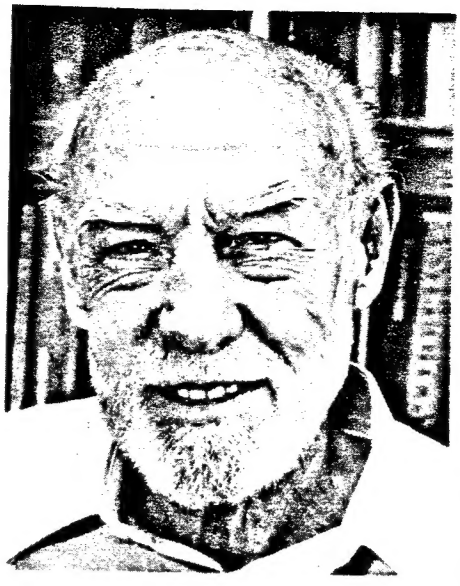
Background Basics

Behavioral science, in the early 1970s, underwent a mainstream paradigm shift in which long dominant behaviorist doctrine was replaced by a new cognitive or mentalist paradigm, the cognitive revolution. This overturned the centuries-old ban on the use in scientific explanation of conscious, subjective, or mental constructs. Among other things, this meant a diametric turnabout in the causal status of consciousness (which I infer here was achieved only by inventing a new paradigm for understanding causality). The new model adds downward to the traditional upward microdeterminism and is claimed to give science a conceptual foundation that is more adequate, valid, and comprehensive. Furthermore, this is achieved with no loss to previous benefits, making the already powerful paradigm of science even stronger.

A Modified Concept of Causal Determinism

This entire case is seen to stand or fall on the validity of a changed concept of consciousness with its modified concept of causal determinism. Instead of an exclusive bottom-up, microdeterminism, we substitute a bidirectional model adding a reciprocal top-down, emergent, or holistic form of downward control. To put it very simply, the old saying that "the whole is greater than the sum of the parts" is just extended into concepts of interlevel determinism. Not only is the whole, as traditionally assumed, constantly controlled from below by its parts, but also, we claim, it works the other way around: The emergent whole, that is, constantly exerts downward control over its parts. The subsequent course and destiny of the parts, once joined together in a larger whole, are determined thereafter by the new higher level, emergent properties of the whole.

The recognition of the major causal role thus played by the higher, more evolved forces of both human and nonhuman nature gives science a vastly changed view of the entire natural order. The mental, subjective, vital, and social forces are given their due, as well as physics and chemistry. No longer is science incompatible with the humanities, values, or ethics. Perhaps of most importance, for present purposes, the great divide between science and religion is removed--at least for liberal, nondualistic theology.



Roger Sperry, PhD

The key concept here, that of downward causation, though simple, has seemed to give more trouble than any other. According to traditional atomistic or microdeterminist science, everything is determined from below upward following the course of evolution. Brain states determine mental states, but not vice-versa. In the new view, however, things are doubly determined, not only from lower levels upward, but also from above downward.

In reference to brain function, the simpler electric, atomic, molecular, and cellular forces and laws, though still present and operating, get superseded, encompassed by the configurational forces of higher level mechanisms of which they are a part. These include the cognitive powers of perception, reason, judgment, and the like, the operational, causal effects and forces of which are equally or more potent in brain dynamics than are the outclassed inner chemical forces.

This double-way, reciprocal form of causal determinism applies, not only to consciousness, but throughout nature to emergent properties in general. It says that traditional scientific materialism, with its exclusive atomistic, reductive physicalist approach, has been in error all along, excluding, not only the mental but also, in principle, all autonomous macro, emergent, or holistic explanations.

Values From Science

Another feature that continues to cause confusion is the assertion that values, including ethical and moral values, can be derived from science. Although foreseen and countered from the start, the objection is still common to this day, namely, that science ought not, indeed cannot and should not, presume to take a stand on moral issues. Morality is claimed to be the province of philosophy, ethics, and theology, a realm in which science and scientists, as such, are not qualified.

The central thrust of our present thesis is exactly the opposite: Namely, that humankind's values, ethics, and moral priorities have, in today's context, become far too crucial to be entrusted to any but our very proven best, most qualified, reliable, and credible authority for what is true and what to believe, namely science. What we value depends on what we believe, and what we believe today about the ultimate basis for values depends on science. The truths and worldview of science are taken to be more valid, real, and dependable than any other.

Faith Consistent With Science

A central and basic feature of our future vision involves a global shift of faith to the kind of truth, reality, and worldview upheld by science. This move is based on a firm conviction that the most valid kind of truth to which humankind has access is that arrived at by science and the scientific method.

The scientific method has been characterized and defined in many different ways. Its real essence lies in the insistence that any inner conclusion or truth is not to be trusted until checked and double checked (by experiment or otherwise) for consistence with outside reality. This checking process occurs naturally in the course of ordinary behavior and is inferred, accordingly, to be an important shaping feature in the evolution of mind. Science formalizes and maximizes this basic principle.

Implications for Change

My few concluding remarks assume an acceptance of the preceding logic that can be summed up as follows: (1) In today's context of a biosphere at risk, high-quality earthly survival becomes the imperative that now overrides all

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Robert J. Sternberg, PhD, Department of Psychology, Yale University, President of Division 15

Division Focus: Division 15

Remember those boring lectures in college that could have been sold to insomniacs as a quicker cure than sleeping pills, without the negative side effects? How about the tests for those courses, the ones you could ace by rote memorization without understanding even a single word you had read? Surely you remember the textbooks that were so bland that they could have been written by robots--for robots.

If you remember or relate to any of these issues, and if you also care about them, then Division 15 is for you. We are the Division of Educational Psychology. But if educational psychology conjures up within you nothing more than a course taught in education schools for future teachers in elementary and secondary schools, you're not, as Al Gore would say, "with the program." Yes, educational psychology still is taught as such a course--to help teachers prepare for the classroom. But modern-day educational psychology is for everyone who cares about issues of teaching and learning, not just for future members of the American Federation of Teachers and National Education Association. We would like to help you, and to have you help us, better understand the psychology of instruction.

What Is Educational Psychology

Today, educational psychology is about the application to education of psychological theory and research in fields as diverse as cognition, personality, motivation, social psychology, clinical and counseling psychology, and biological psychology. Put in another way, educational psychology is for everyone who is interested in how the ideas of his or her specialty within psychology can be applied to improve the teaching-learning process at all levels of instruction. If you are interested in how schools can be improved for your own children, or for how you can improve your own teaching or learning, then you are interested in the kinds of issues we deeply care about in our division, and we invite you to join.

Publications and Awards

Division 15 is an active division. Our journal, the Educational Psychologist, published by Lawrence Erlbaum Associates, is widely respected and is distributed to all members. It publishes some of the premier work in the field of educational psychology. We also have a division newsletter that keeps members informed of the comings and goings of the field. We have published special books, and we have also suggested standards that can be used in classroom teaching and learning. We always have an exciting program at the APA convention, and the Thorndike Award is given annually at this meeting to a distinguished contributor to the field of educational psychology. We also have an early career award. Our members are professionals, students, and others who are actively involved in shaping education.

Joining the Division

We welcome as members all those who want to improve education in America and elsewhere. If you would like more information about our division or would like to join, please contact me personally: Robert J. Sternberg, PhD, Department of Psychology, Yale University, Box 208205, New Haven, CT 06520-8205. I'm eager to hear from you! ■

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A Powerful Paradigm Made Stronger

others. This necessarily includes various supernatural, otherworldly, or dualistic forms of salvation. (2) Any noncatastrophic survival will depend now on a very rapid and radical global change in conventional human value-belief systems. (3) Such a global value change would be achieved most effectively through a change at the top of the value hierarchy, that is, in what humankind believes to be most sacred. (4) Such change is best guided by worldview concepts that are consistent with modern science, as now modified by the consciousness revolution. (5) This translates into value-belief and moral guidelines that derive from the grand overall design of evolving nature. In other words, we put faith in those guideline principles that have been proven to work, over thousands of millennia, in lifting life from the amoebic to the human level.

This grand design that we see in evolving nature is not at all similar to that of the physicist's "watchmaker." The design in this case is not preformed. It evolves gradually in stages through self-organization. It is a dynamic developing entity, not static, the upper reaches of which remain unknown and open-ended.

In sum, our case for a noncatastrophic survival narrows down to an acceptance by each of us--all 500 billion plus--of an evolved common-core sense of the sacred and the reasons for each doing everything possible to save and cherish what--so far as we yet know--represents the peak of all creation. ■